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Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

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FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF SECRETARY

In the Matter of)
)
Amendment of Part 90 of the)
Commission's Rules to) RM-8499
Establish a Very Short Distance)
Two-Way Voice Radio Service)

DOCKET FILE COPY ORIGINAL

To: The Commission

COMMENTS OF MOTOROLA, INC.

Motorola, Inc. ("Motorola")¹ hereby submits these comments in response to the Commission's Notice of Proposed Rule Making ("Notice") adopted June 22, 1995, in the above-captioned proceeding.² As detailed below, Motorola enthusiastically supports the Commission's proposal to amend Part 95 of the Rules to provide for the establishment of the Family Radio Service as a means for responding to the public demand for an affordable, high quality, short range, two-way voice communications

¹ Motorola is the world's leading manufacturer of two-way radio communications equipment. The company's expertise includes high performance cellular radio equipment and advanced digital technology for Specialized Mobile Radio ("SMR") systems and other private radio users. Motorola also offers a variety of products to serve the communications needs of individuals authorized to operate in the General Mobile Radio Service under Part 95 of the Commission's Rules. Motorola's experience in offering products to a wide variety of market segments makes it uniquely qualified to comment on the Commission's proposal to create the Family Radio Service.

² Amendment of Part 95 of the Commission's Rules to Establish a Very Short Distance Two-Way Radio Service, FCC 95-261 (released Aug. 2, 1995) [hereinafter *Notice*].

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alternative. Furthermore, Motorola believes that the technical and operational rules proposed by the Commission, with minor modification, strike an appropriate balance between the agency's dual interest in designing a radio service capable of satisfying the needs of consumers while at the same time ensuring the interference-free operations of licensees in the General Mobile Radio Service ("GMRS").

I. Background

The Commission's proposal in the instant proceeding is an outgrowth of a Petition for Rule Making filed July 20, 1994, by Radio Shack Division of Tandy Corporation ("Tandy").³ In its Petition, Tandy asked the Commission to commence a rule making to establish a new, unlicensed radio service that Tandy designated the "Family Radio Service."

Tandy suggested that the Family Radio Service be a two-way, short range voice service, free of access charges or service fees, used to satisfy the routine and emergency communications needs of families, friends, and public service organizations. As examples of potential users, Tandy mentioned neighborhood watch groups that are not eligible for GMRS licensing or parents who wish to monitor their children's activities.⁴ In order to ease the regulatory burden on users and the Commission staff,

³ Radio Shack Division of Tandy Corporation, Petition for Rule Making at 2 (filed July 20, 1994) [hereinafter *Tandy Petition*].

⁴ *Id.* at 3.

Tandy urged the Commission to offer the service on an unlicensed basis. As a source of spectrum, Tandy recommended the seven interstitial channels in the 462 MHz band and the seven interstitial channels in the 467 MHz band, to be shared with the GMRS.⁵

As mentioned in the *Notice*, Motorola and the Telecommunications Industry Association ("TIA") filed comments supporting the Tandy Petition. These commenters generally asserted that the Family Radio Service would fulfill an unmet communications need without posing a threat of harmful interference to GMRS operations.⁶ The Personal Radio Steering Group ("PRSG") and individual GMRS licensees filed comments opposing the Tandy Petition on the ground that the proposal will create a risk of interference to GMRS systems or is otherwise unworkable.⁷

⁵ *Id.* at 6-8.

⁶ *See generally* Comments of the Mobile and Personal Communications Division, Private Radio Section of the Telecommunications Industry Association ("TIA"), RM-8499 (filed Aug. 25, 1994); Statement of Support of Motorola, Inc., RM-8499 (filed Aug. 25, 1994).

⁷ *See generally* Comments of REACT International, Inc., RM-8499 (filed Aug. 25, 1994); Comments of the Personal Radio Steering Group, Inc. ("PRSG"), RM-8499 (filed Aug. 25, 1994); Comments of Dr. Michael C. Trahos, RM-8499 (filed Aug. 25, 1994).

On August 2, 1995, the Commission adopted its *Notice* essentially endorsing the *Tandy Petition* and proposing to amend Part 95 to provide for the establishment of the Family Radio Service. The Commission found that "[t]he [Tandy] petition and the comments make a convincing argument as to the need for a good quality very short range unlicensed voice radio communications service for use by small groups."⁸ In addition, the Commission stated that the "technical standards proposed by Tandy should provide good quality communications over a range of approximately one kilometer."⁹ The Commission observed that, at the same time, "[a] number of factors . . . limit the interference potential of these units." In this connection, the Commission noted: (1) the line-of-sight propagation characteristics of frequencies in the UHF range; (2) the simple antennas used in the unit, coupled with its very low transmitter power; (3) the capture effect provided by FM emission types; and (4) selective calling, if incorporated.¹⁰

In addition, the Commission stated that in order for the Family Radio Service to be attractive to users, there should not be any requirements for operation or station licenses.¹¹ In this same vein, the Commission stated that it could not foresee any regulatory purpose to be served by requiring licenses in such a service, and opted

⁸ *Notice* at ¶ 7.

⁹ *Id.* at ¶ 8.

¹⁰ *Id.*

¹¹ *Id.* at ¶ 9.

instead to regulate the usage of Family Radio Service units through technical standards and type certification requirements.¹² The Commission indicated its belief that the technical standards applicable to the radio units should preclude any serious disruption to GMRS systems.¹³

Finally, the Commission proposed technical rules similar to those requested in the Tandy Petition and the comments. In particular, the Commission proposed that: (1) the units would transmit frequency modulated voice emission type F3E only; (2) the authorized bandwidth would be 12.5 kHz; (3) the maximum power of the transmitter would be one-half watt; and (4) the antenna must be an integral part of the transmitter, must have no gain, and must be vertically polarized.¹⁴ The Commission solicited comment on all aspects of its proposals, and specifically requested commenters to address the sufficiency of the proposed technical standards to support the Family Radio Service.

II. The Commission's Proposal To Establish the Family Radio Service Responds To Demonstrated Public Demand And Will Serve the Public Interest.

Motorola agrees with the Commission's conclusion that there is a strong public demand for an affordable, high quality, short range, two-way communications

¹² *Id.*

¹³ *Id.* at ¶ 10.

¹⁴ *Id.* at ¶ 11.

alternative that can be used by small segments of the general public. In its role as an equipment manufacturer, Motorola has observed that a sizable market exists for a low-cost, sophisticated two-way radio service capable of providing greater service reliability than citizens band ("CB") radio without the regulatory oversight of the GMRS.

Significantly, the types of users most likely to benefit from the Family Radio Service -- parents seeking a means for keeping track of their children, grass roots public safety organizations, and groups of individuals engaged in sporting activities -- are not well accommodated under the Commission's existing radio services. In particular, while CB radio is an available alternative, it is characterized by high levels of interference and does not permit private conversations. Similarly, the service costs associated with carrier-based options, such as cellular radio, enhanced SMR service, and paging, make these services an impractical alternative for individual families and non-profit organizations interested in low cost, short range communications capability. The Family Radio Service, as proposed by the Commission, creates a communications option precisely suited to fill this void. Accordingly, Motorola supports the Commission's proposal to amend Part 95 to create the Family Radio Service.

Relatedly, Motorola supports the Commission's proposal not to impose operator or station licensing requirements in the Family Radio Service. In Motorola's experience, individual consumers are disinclined to participate in radio services that require licensing, especially where, as here, the FCC's application and/or regulatory fees would account for an excessive percent of what should be a relatively low cost

product.¹⁵ As such, for the Family Radio Service to be truly successful in addressing the unmet communications requirements that the service is designed to meet, it is imperative that the service be unlicensed.

In this same connection, Motorola agrees with the Commission's conclusion that the nature of the proposed Family Radio Service and the applicable technical requirements render a licensing requirement unnecessary.¹⁶ In light of the low power proposed for Family Radio Service operations, coupled with the fact that the service will be used primarily for itinerant use, a licensing process would offer very little, if any, benefits in terms of spectrum management.

III. Technical Standards

As noted, the FCC's *Notice* provides a few technical standards intended to provide protection to both Family Radio Service and GMRS operations. After careful analysis of the Commission's proposals, Motorola supports the decision to limit Family Radio Service operations to the interstitial 12.5 kHz-spaced channels. However, Motorola believes that the technical standards need to be refined in order to ensure interference protection to the primary GMRS channels.

¹⁵ As indicated in Motorola's Statement in Support of the Tandy Petition, Motorola plans to market "shrink-wrapped" radios, priced between \$100 to \$250, for use in the Family Radio Service. Under existing rules, the application fee alone for a new GMRS license is \$60, adding a significant extra cost for potential users.

¹⁶ See *Notice* at ¶ 10.

The FCC's proposed rules would permit a maximum frequency deviation of 5 kHz. At that level of deviation, FM sidebands will splatter into the adjacent primary GMRS frequencies. As defined in Section 2.202 of the FCC's rules, necessary bandwidth (BW) is calculated through the equation $BW = 2D + 2M$ where D is equal to the maximum frequency deviation and M is equal to the maximum audio frequency response. When D is equal to 5 kHz and M is equal to 3 kHz (standard for FM voice emissions), the necessary bandwidth calculates to 16 kHz. In order to reduce the required bandwidth, it is necessary to either reduce the deviation (D) or audio response (M) or both. Since reducing audio bandwidth would have an adverse effect on voice quality, it is desirable to limit maximum frequency deviation. Motorola therefore recommends that Section 95.635 be modified to limit deviation to a maximum of 2.5 kHz and limit audio frequency response to a maximum of 3.125 kHz [$BW = 2(2.5) + 2(3.125) = 11.25$ kHz].¹⁷ This provides bandwidth usage which limits interference with primary GMRS channels, and is also consistent with designs intended to be introduced into the private land mobile "refarmed" frequency bands below 800 MHz.¹⁸

¹⁷ In so doing, the FCC should also amend proposed Section 90.631 to limit the authorized bandwidth of Family Radio Service transmitters to 11.25 kHz.

¹⁸ See Replacement of Part 90 by Part 88 to Revise the Private Land Mobile Radio Services and Modify the Policies Governing Them and Examination of Exclusivity and Frequency Assignment Policies of the Private Land Mobile Services, PR Docket No. 92-235 (June 15, 1995).

Motorola also believes that the proposed frequency stability of 0.0005 % is insufficient to ensure interference protection to the primary GMRS frequencies. Reducing the level of permitted drift will provide greater interference protection to adjacent channel GMRS operations and will provide manufacturers with a common specification to that adopted in the FCC's Refarming proceeding for Private Land Mobile operations. For these reasons, Motorola recommends that proposed Section 95.627(b) be amended to specify a frequency tolerance of 0.00025 %.

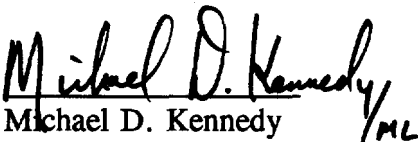
Beyond these few changes, Motorola supports the remaining FCC proposals. Interconnection with the switched telephone service should be prohibited so that the intended purpose of this radio service is not distorted. Also, Motorola supports the FCC's decision to allow the use of selective calling techniques on a voluntary basis. There is no clear need at this time to establish FCC standards for such techniques and any attempt to do so would only serve to delay the introduction of this service to the public. Motorola does, however, ask the Commission to clarify that the maximum permitted power of 0.500 watts be specified in terms of ERP measured at the units' antenna. The specification of power in terms of ERP will provide greater interference protection to adjacent channels.

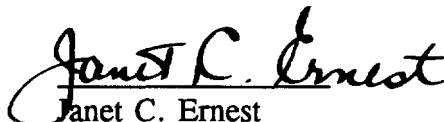
IV. Conclusion

For the reasons set forth above, Motorola supports the Commission's proposal to amend Part 95 of the Rules to allow for the establishment of the Family Radio Service. The Commission's proposal to create an unlicensed, short distance, two-way voice radio service responds to demonstrated public demand and will serve the public interest by providing members of the general public an affordable communications alternative tailored to their as yet unmet needs, while at the same time ensuring that other operations are not adversely affected in any way.

Respectfully submitted,

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Dated: October 2, 1995

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